Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:
2013 Rio Puerto Nuevo, Puerto Rico ADS40 4-Band Imagery

1.2. Summary description of the data:
Imagery acquired with airborne sensors contain camera and terrain related distortions which make the images unsuitable for geospatial analysis as positions within the image may be significantly inaccurate. A digital orthophoto is a georeferenced image prepared from aerial imagery, or other remotely-sensed data in which the displacement within the image due to sensor orientation and terrain relief has been removed. Orthophotos combine the image characteristics of an image with the geometric qualities of a map. Orthoimages show ground features such as roads, buildings, and streams in their proper positions, without the distortion characteristic of unrectified aerial imagery.   Digital Orthoimages produced and used within the Forest Service are developed from imagery acquired through various national and regional image acquisition programs. The resulting orthoimages, also known as orthomaps, can be directly applied in remote sensing, GIS and mapping applications. They serve a variety of purposes, from interim maps to field Standards for Digital Orthophotos references for earth science investigations and analysis. Because of the orthographic property, an orthoimage can be used like a map for measurement of distances, angles, and areas with scale being constant everywhere. Also they can be used as map layers in GIS or other computer based manipulation, overlaying, and analysis. An orthoimage differs from a map in a manner of depiction of detail; On the map only selected detail is shown by conventional symbols, whereas on an orthoimage all details appear just as in original aerial imagery.

Original contact information:

Contact Org: U.S. Army Corps of Engineers, Jacksonville District, Geomatics Section

Phone: 904-232-2214

Email: ted.n.schall@usace.army.mil

1.3. Is this a one-time data collection, or an ongoing series of measurements?
One-time data collection

1.4. Actual or planned temporal coverage of the data:
2013-03-13

1.5. Actual or planned geographic coverage of the data:
W: -66.159, E: -66.026, N: 18.484, S: 18.348

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources

Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

5. Data Lineage and Quality
NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible
(describe or provide URL of description):
Process Steps:
- 2013-04-05 00:00:00 - The imagery was collected using an ADS40-SH51 digital sensor. Collection was performed using a Cessna 402C flying at 3200' above mean terrain with 30% sidelap, giving the collected data nominal ground sampling distance of 0.1 meters. Based-upon the CCD Array configuration present in the ADS40 digital sensor, imagery for each flight line is 12,000-pixels in width. Red, Green, Blue, Near-Infrared and Panchromatic image bands were collected. Collected data was downloaded to portable hard drives and shipped to the processing facility daily. Raw flight data was extracted from external data drives using GPro software. Airborne GPS / IMU data was post-processed using IPAS, PosPac and/or TerraPos software and reviewed to ensure sufficient accuracy for project requirements. Using PictoVera software, low resolution rectified images were generated from the collected data for use in image quality review. The low resolution images were generated at 0.6 meter resolution using a two standard deviation histogram stretch. Factors considered during this review included but were not limited to the presence of smoke and/or cloud cover, contrails, light conditions, sun glint and any sensor or hardware-related issues that potentially could result in faulty data. When necessary, image strips identified as not meeting image quality specifications were re-flown to obtain suitable imagery.
- 2013-04-05 00:00:00 - Aero-triangulation was performed in a single block bundle adjustment within the PictoVera software. Image tie points providing the observations for the least squares bundle adjustment were selected from the images using an auto correlation algorithm. Photogrammetric control points consisted of photo identifiable control points, collected using GPS field survey techniques. The control points were loaded in to the softcopy workstation and measured in the acquired image strips. A least squares bundle adjustment of image tie points, control points and the ABGPS was performed to develop an aero triangulation solution for the block using PictoVera software. Upon final bundle adjustment, the triangulated strips were ortho-rectified to the DEM. Digital elevation models (DEM) consisted of existing elevation source data provided as GFI,

and new elevation data auto-correlated from imagery over areas where significant earthwork had occurred. The PictoVera autocorrelation module is used to generate digital surface model (DSM) mass points for areas required new elevation data. The autocorrelation module uses an APM algorithm to measure mass points from the forward, nadir, and backward panchromatic images; searching in the three images throughout the entire width and length of each flightline for matching features. The DSM mass points model the ground surface and above ground features, and must be filtered to a digital terrain model (DTM) representing only ground features for use in orthorectification. The SimActive Correlator 3D software was used to generate the required DTM from the PictoVera DSM. The filtered DTM was then interpolated to a regularly gridded DEM and merged with the source DEM for use in the PictoVera rectification module. The DEM is reviewed for any elevation anomalies that would introduce image smearing during orthorectification, and manual edits made as necessary to remove any anomalies. Positional accuracy was reviewed in the rectified imagery by visually verifying the horizontal positioning of the known photo-identifiable survey locations using ArcGIS software. The red, green, blue, and near-infrared bands were combined to generate a final ortho-rectified image strip. The ADS40 sensor collects twelve bit image data which requires radiometric adjustment for output in standard eight bit image channels. The ortho- rectified image strips were produced with the full 12 bit data range, allowing radiometric adjustment to 8 bit range to be performed on a strip by strip basis during the final mosaicking steps. The imagery was mosaicked using manual seam line generation in Orthovista Seam Editor (OVSE). The 12 bit data range was adjusted for display in standard eight bit image channels by defining a piecewise histogram stretch using OrthoVista software. A constant stretch was defined for each image collection period, and then strip by strip adjustments were made as needed to account for changes in sun angle and azimuth during the collection period. Strip adjustments were also made to match the strips histograms as closely as possible to APFO specified histogram metrics and color balance requirements. Automated balancing algorithms were applied to account for bi- directional reflectance as a final step before the conversion to 8 bit data range. Specified 4-band image tiles were extracted from the final mosaic in GeoTIFF format. Local corrections were made where necessary to permit displaying the tiles as a uniform mosaic.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation
The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented,

specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?
No

6.1.1. If metadata are non-existent or non-compliant, please explain:
Missing/invalid information:
- 1.6. Type(s) of data
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.3. Data access methods or services offered
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

6.2. Name of organization or facility providing metadata hosting:
NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:
https://www.fisheries.noaa.gov/inport/item/49507

6.4. Process for producing and maintaining metadata
(describe or provide URL of description):
Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access
NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides

information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:
https://coast.noaa.gov/dataviewer/#/imagery/search/where:ID=4691
https://coast.noaa.gov/htdata/raster2/imagery/PuertoNuevoPR_2013_4691

7.3. Data access methods or services offered:

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection
The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):
Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?
Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.